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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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INTERNATIONAL BUSINESS MACHINES CORPORATION 5600 COTTLE ROAD, DEPT. L2PA/010 INTELLECTUAL PROPERTY LAW SAN JOSE, CA 95193-0001				
			EXAMINER CHOUDHURY, AZIZUL Q	
			ART UNIT 2145	PAPER NUMBER

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,310.

Applicant(s)

AXBERG ET AL.

Examiner

Azizul Choudhury

Art Unit

2145

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/25/02</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by
Crockett et al (US Pat No: US005504861A), hereafter referred to as Crockett.

1. With regards to claim 1, Crockett teaches a system for managing a storage area network (SAN) of the type that a plurality of components, including any of storage devices and digital data processors, the improvement comprising: a first element that maintains a first representation of the SAN and that generates an event notification indicative of an event with respect to the SAN, a second element in communication with the first element, the second element maintaining a second representation of the SAN and responding to the event notification by accessing the first representation and updating the second representation, the second element responding to a discrepancy between the event notification and an attribute of any of the first and second representations by selectively disregarding the event notification or recovering the second representation from one or more attributes of the first representation (Crockett teaches a design

allowing for data shadowing for disaster recovery. The design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett). Detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

2. With regards to claim 2, Crockett teaches the improvement wherein the SAN comprises a plurality of hosts, each coupled via a first network with one or more storage units, the hosts and storage units collectively comprising the components, one or more agents each associated with one or more hosts, each agent generating a scan identifying attributes of any of (i) the host with which it is associated, (ii) a storage unit to which that host is coupled, and (iii) a relationship therebetween, and the agents in communication coupling with the first element a transmitting the scan thereto (Crockett's design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett)).
3. With regards to claim 3, Crockett teaches the improvement wherein the agents transmit the scans to the first element asynchronously with respect to one another (Crockett's design features capturing means (since data is captured and

data is retrieved and stored for recovery, it is inherent that agents are present within the design) (Figure 10, Crockett)).

4. With regards to claim 4, Crockett teaches the improvement wherein the first representation comprises scans received from the one or more agents (Crockett's design features capturing means (since data is captured and data is retrieved and stored for recovery, it is inherent that agents are present within the design) (Figure 10, Crockett)).
5. With regards to claim 5, Crockett teaches the improvement wherein the hosts comprise digital data processors and the agents execute on the host digital data processors ((Crockett's design features capturing means (since data is captured and data is retrieved and stored for recovery, it is inherent that agents are present within the design) (Figure 10, Crockett). The hosts capture the data and hence the agents of Crockett's design must be located within the host).
6. With regards to claim 6, Crockett teaches the improvement comprising a manager digital data processor is coupled to the host digital data processors by via a second network, wherein the first and second element execute in connection with the manager digital data processor (Crockett's design features storage controllers (Figure 4, Crockett)).

7. With regards to claim 7, Crockett teaches the further improvement comprising functionality that recovers the second representation by any of i) clearing the second representation and rebuilding that representation from attributes of the first representation, ii) comparing the first and second representations in whole or in part, and copying from the first representation to the second representation attributes missing from the latter, while any of deleting or marking as missing attributes in the second representation indicative of components present in the second representation but not in the first representation, and iii) copying from the first representation to the second representation one or more attributes indicative of any of (a) a component or relationships represented by an attribute in connection with which the discrepancy occurred, and (b) a component or relationship in a region a component or relationships represented by an attribute in connection with which the discrepancy occurred (Crockett teaches a design allowing for data shadowing for disaster recovery. The design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett). Detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

8. With regards to claim 8, Crockett teaches a system for managing a storage area network (SAN) of the type that a plurality of components, including any of storage devices and digital data processors, the improvement comprising: a first element that maintains a first representation of the SAN and that generates an event notification indicative of an event with respect to the SAN, a second element in communication with the first element, the second element maintaining a second representation of the SAN and responding to the event notification by accessing the first representation and updating the second representation, the second element disregarding the event notification if any of i) the event notification is indicative of addition of a new component to the SAN and an attribute of the first representation is indicative of absence of that component, ii) the event notification is indicative of addition of a relationship between components of the SAN and an attribute of the first representation is indicative of absence of that relationship, iii) the event notification is indicative of addition of a relationship between components of the SAN and an attribute of the second representation is indicative of the absence from the SAN of one of the components to that relationship, iv) the event notification is indicative of a missing component of the SAN and an attribute of the second representation indicative of the absence of that component from the SAN, v) the event notification is indicative of a missing component of the SAN and an attribute of the second representation indicates representation of that component in the second representation, but the absence of that component from the SAN, vi) the event notification is indicative of a

missing relationship between components of the SAN and an attribute of the second representation indicative of absence of that relationship in the second representation, or vii) the event notification is indicative of a missing relationship in the SAN and an attribute of the second representation indicates inclusion of that relationship in the second representation, but the absence of that component from the SAN (Crockett teaches a design allowing for data shadowing for disaster recovery. The design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett). Detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

9. With regards to claim 9, Crockett teaches a system for managing a storage area network (SAN) of the type that a plurality of components, including any of storage devices and digital data processors, the improvement comprising: a first element that maintains a first representation of the SAN and that generates an event notification indicative of an event with respect to the SAN, a second element in communication with the first element, the second element maintaining a second representation of the SAN and responding to the event notification by accessing the first representation and updating the second representation, the second

element responding to a discrepancy between the event notification and an attribute of any of the first and second representations by selectively recovering the second representation from one or more attributes of the first representation if any of i) the event notification is indicative of addition of a new component to the SAN and an attribute of the first representation is indicative of the presence of that component, ii) the event notification is indicative of addition of a relationship between components of the SAN and an attribute of the second representation is indicative of the presence of that relationship, iii) the event notification is indicative of modification of an attribute of a component of the SAN and an attribute of the second representation is indicative of the absence from the SAN of that component, or iv) the event notification is indicative of modification of an attribute of a component of the SAN and an attribute of the second representation indicative of inclusion of that component in the second representation but its absence from the SAN (Crockett teaches a design allowing for data shadowing for disaster recovery. The design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett). Detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

10. With regards to claim 10, Crockett teaches a method of managing a storage area network (SAN) of the type that a plurality of components, including any of storage devices and digital data processors, the improvement comprising: maintaining a first representation of the SAN and generating event notification indicative of an event with respect to the SAN, maintaining a second representation of the SAN and responding to the event notification by accessing the first representation, and updating the second representation, responding to a discrepancy between the event notification and an attribute of any of the first and second representations by selectively disregarding the event notification or recovering the second representation from one or more attributes of the first representation (Crockett teaches a design allowing for data shadowing for disaster recovery. The design features two hosts that each store recovery data (Figure 4, Crockett). In the design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett). Detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

11. With regards to claim 11, Crockett teaches the further improvement wherein the recovering step includes any of i) clearing the second representation and rebuilding that representation from attributes of the first representation, ii)

comparing the first and second representations in whole or in part, and copying from the first representation to the second representation attributes missing from the latter while any of deleting or marking as missing attributes in the second representation indicative of components present in the second representation but not in the first representation, and iii) copying from the first representation to the second representation one or more attributes indicative of any of (a) a component or relationships represented by an attribute in connection with which the discrepancy occurred, and (b) a component or relationship in a region a component or relationships represented by an attribute in connection with which the discrepancy occurred (In Crockett's design, the second host obtains recovery data from the primary host (column 10, lines 35-44, Crockett). The data has to be pertinent enough to no longer require the primary host in the event of a disaster recovery scenario (column 10, lines 49-53, Crockett)).

12. With regards to claim 12, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a new component to the SAN, and an attribute of the first representation indicative of absence of that component, by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

13. With regards to claim 13, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a new component to the SAN, and an attribute of the first representation indicative of absence of that component, by determining whether the component is in the second representation and, if so, updating the second representation to indicate that component's status is suspect (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).
14. With regards to claim 14, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a new component to the SAN, and an attribute of the first representation indicative of the presence of that component, by performing a recovery operation on the second representation (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).
15. With regards to claim 15, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a relationship between components of the SAN, and an attribute of the first representation indicative of absence of that relationship by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to

trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

16. With regards to claim 16, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a relationship between components of the SAN, and an attribute of the second representation indicative of the presence of that relationship, by performing a recovery operation on the second representation (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

17. With regards to claim 17, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of addition of a relationship between components of the SAN, and an attribute of the second representation indicative of the absence from the SAN of one of the components to that relationship by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)). Synchronization is also triggered by other factors such as time).

18. With regards to claim 18, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of

modification of an attribute of a component of the SAN, and an attribute of the second representation indicative of the absence from the SAN of that component, by performing a recovery operation on the second representation (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

19. With regards to claim 19, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of modification of an attribute of a component of the SAN, and an attribute of the second representation indicating presence of representation of that component in the second representation but its absence from the SAN, by performing a recovery operation on the second representation (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

20. With regards to claim 20, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of a missing component of the SAN, and an attribute of the second representation the absence of that component from the SAN, by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such

synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

21. With regards to claim 21, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of a missing component of the SAN, and an attribute of the second representation indicates inclusion of that component in the second representation, but the absence of that component from the SAN, by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

22. With regards to claim 22, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of a missing relationship between components of the SAN, and an attribute of the second representation indicative of absence of that relationship in the second representation, by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

23. With regards to claim 23, Crockett teaches the further improvement wherein the responding step includes responding to an event notification indicative of a

missing relationship in the SAN, and an attribute of the second representation indicates inclusion of that relationship in the second representation, but the absence of that component from the SAN, by disregarding the event notification (Crockett's design allows for detection of errors (events) are able to trigger such synchronization between the primary and secondary hosts (column 7, lines 34-44, Crockett)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Azizul Choudhury whose telephone number is (571) 272-3909. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571) 272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUPERVISORY PATENT EXAMINER